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AMONG MY AUTOGRAPHS.

By DAVID EUGENE SMITH, Columbia University.

6. The Threatened Loss of the Second Edition of Montucla's History of Mathematics.

The period of the French Revolution was not favorable to scientific work. One has only to read M. Bigourdan's delightfully written history of the metric system, or to consider the quasi-judicial murder of Bailly and the tragic suicide of Condorcet, in order to understand the hostile attitude of the *sansculottes* to all intellectual pursuits.

It was during this period that Montucla (1725–1799), then upwards of seventy years of age, interested the astronomer La Lande (1732–1807) to prepare the second edition of the *Histoire des Mathématiques* which had appeared nearly half a century earlier. The learned world knows how La Lande, with the aid of various other distinguished scholars, carried out the undertaking, but it has long since forgotten, if it ever knew, the discouragements which were met by both Montucla and his more active colleague before the work finally made its appearance in the years 1799–1802.

Among the most interesting brief notes in my collection of nearly forty autograph letters of La Lande is one which he wrote on the occasion of a call upon M. Henri Agasse, in the year 1796, three years before the first volume of this edition appeared. M. Agasse was the publisher, his establishment being at No. 18, rue des Poitevins. La Lande was evidently unsuccessful in finding the publisher in, and so he took a scrap of paper and wrote upon it, in a few lines, and in his well-known microscopic hand, the following interesting story:

> 5 Thermidor an 4 [July 23, 1796]
>
> Lalande has come to solicit Citizen Agasse with respect to continuing the history of mathematics. Montucla is disgusted, annoyed, at the interruption, on the point of being tempted to abandon the entire work and of burning the whole thing up. Have pity on an old invalid.

The solicitation, however, seems to have produced but little result, for it was not until three years later that the first volume appeared, only four months before Montucla passed away.

The other letters of La Lande throw an interesting side light upon the history of the time in which he lived. From only about forty letters it is, of course, impossible to generalize with a high degree of certainty upon such a trivial matter as the spelling of a name, and moreover it is well known that little attention was paid to such details before the nineteenth century. One interesting thing is apparent, however, and that is the effect of the French Revolution, and especially the Reign of Terror, upon the use of aristocratic names in general.

In 1755, when La Lande was twenty-three years old he wrote his name Lalande. Youth leans to democratic forms. As he grew older he used the form

La Lande, this occasionally appearing in letters between 1770 and 1786, but he preferred the more aristocratic De la Lande. As soon as the Reds came into power, however, he dropped the De and wrote only Lalande. This form he continued to use until Napoleon made his spectacular appearance and began to look forward to occupying the imperial throne. Then La Lande returned again to the form De la Lande, which he had preferred before the Revolution, and this form, which also appears on the title pages of volumes II and III, he seems to have generally used until the time of his death, in 1807.

Undoubtedly a similar course was taken by all upon whom ancestral rights conferred the coveted *de*, but it may interest those whose work leads them to consider the contributions of La Lande to have this information from a rather large collection of his letters. The matter is of little consequence, and would have even less importance if biographers were more careful in examining the correspondence of those concerning whom they write; but everyone who has occasion to consult the various monographs and books relating to the lives of scientists knows that such details have little attention on the part of writers. On this account the information may be of some slight service.

7. MONGE THE LESSER.

It often happens, in the reading of history, that individuals who would naturally stand out with some prominence are obscured by the overshadowing of identical names. Thus we have the two Āryabhaṭas in India, the two Psellus's in Byzantium, the two al-Khowârizmîs in Bagdad, and the two Aragos in France, each case giving rise to some confusion to the casual reader, and the lesser of the two being obscured by the light of the greater.

One of the letters which I have and which bears the name of Monge illustrates this fact. It is in itself of little consequence, but if Gaspard Monge had not been the genius that he was, his brother Louis might have been remembered. The letter is as follows:

> Toulon, 20 Nivose, year 5 [January 9, 1797] Monge, Examiner in hydrography in the Navy, to Citizen Groignard, Ordonnateur [director] of the Navy.
>
> *Citizen Ordonnateur,*
>
> The minister having authorized you, by his letter of the 26th thermidor, to give me such pecuniary aid as I may need on my journey, I beg you to be so good as to remit to me the sum of 950# [i.e., 950 French livres], which will be necessary not only to pay for my sojourn at Marseilles and at Toulon, but also for my return to Paris.
>
> Salut et fraternité,
> MONGE.

In his eloquent eulogy on Gaspard Monge, delivered in 1846, Arago speaks of the struggles of Jacques Monge, the father, to obtain the means of sending his three sons to the college at Beaune, their native city. He records how the three sons "responded to the paternal solicitude," each making a success in his profession, Gaspard, however, being the only one to achieve fame.

The writer of the above letter was Louis Monge. He was born on April 11, 1748, and died on October 6, 1827. He was therefore two years younger than his illustrious brother and survived him by nine years. He was well and favorably known both as a mathematician and as a hydrographer. He was attached to the ill-fated voyage of discovery led by La Pérouse (La Peyrouse), but fortunately was compelled to abandon the trip owing to illness which developed at Teneriffe. He became professor of mathematics in the Ecole militaire, and later became professor and examiner in hydrography in the navy. Thanks to his brother's influence, the latter having a position as minister in the revolutionary period, he passed safely through the Days of Terror, and in 1797, when the worst was over, he occupied the position which the letter indicates.

QUESTIONS AND DISCUSSIONS.

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DISCUSSIONS.

The discussion by Professor Moritz on geometric illustrations of indeterminate forms should prove interesting and valuable. It is not superfluous to take this occasion to point out the extraordinary misunderstanding and logical inaccuracy often associated with the subject of indeterminate forms. Errors are common in our textbooks, and some teachers have never become acquainted with the correct point of view. It will be necessary first to touch upon the ideas of zero and infinity, which are scarcely less hazy.

In the first place, it should be clearly understood that the number system which is agreed upon by mathematicians as best representing the practical needs of analysis—irrespective of the obvious possibility of other self-consistent number systems, whose properties may agree to a greater or less extent with those of the usual system—does contain a number *zero*, as real, with as definite a meaning as any other number, and having, with one exception, properties like those of any other number. This ordinary number system, on the other hand, does *not* contain a number *infinity*. If any one prefers a system which shall not contain zero or which shall contain infinity, then, so long as he formulates self-consistent laws of operation, he is entirely free to use his system; but he cannot expect mathematicians generally to follow his lead unless he can show that his system involves fewer exceptions or inconveniences than that to which they are accustomed.

If we are to use the ordinary system, we shall have no difficulty provided we take account of the fact that its laws are uniform and general, except in one single particular: the number zero cannot be used as a divisor. The expression 2/0 does not represent some mysterious unattainable large number; it represents no number whatever. The expression 0/0 does not represent several, many, or all numbers[1]; it represents no number whatever.

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[1] A logical system might be set up in which 0/0 would have this multiple-valued interpretation; such a system would apparently be about as convenient as the usual one; but it is not the usual one.